FCC RF Test Report

APPLICANT	**:**	**Nyle Oswind Parry Limited Liability Company**
EQUIPMENT	**:**	**Tablet PC**
MODEL NAME	**:**	**GQY56XZ**
FCC ID	**:**	**2ABO6-0725**
STANDARD	**:**	**FCC Part 15 Subpart E §15.407**
CLASSIFICATION	**:**	**(NII) Unlicensed National Information Infrastructure**

Testing was completed on Jul. 23, 2014. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager

Testing Laboratory
1190

SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR432436-09E	Rev. 01	Initial issue of report	Aug. 01, 2014
FR432436-09E	Rev. 02	1. Remove IC Rule at Page4. 2. Revise applicable standards FCC KDB 789033 D01 General UNII Test Procedures Old Rules v01r04 to FCC KDB 789033 D02 General UNII Test Procedures New Rules v01. 3. Revise FCC 6 dB Bandwidth Power Limit (dBm) to Min. Limit(MHz) 4. Revise section 3.2.1 and 3.2.3. 5. Revise section 3.3.1 and 3.3.3. 6. Revise section 3.4.1 and 3.4.3.	Aug. 22, 2014

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.403(i)	26dB Bandwidth	-	Pass	-
3.2	15.407(a)	Maximum Conducted Output Power	≤ 17, 24, 30 dBm (depend on band)	Pass	-
3.3	15.407(a)	Power Spectral Density	≤ 4, 11, 17 dBm (depend on band)	Pass	-
3.4	15.407(b)	Unwanted Emissions	≤ -17, -27 dBm (depend on band)&15.209(a)	Pass	Under limit 0.76 dB at 5710.360 MHz
3.5	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 6.30 dB at 3.702 MHz
3.6	15.407(g)	Frequency Stability	Within Operation Band	Pass	-
3.7	15.407(c)	Automatically Discontinue Transmission	Discontinue Transmission	Pass	-
3.8	15.203 & 15.407(a)	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Nyle Oswind Parry Limited Liability Company
7027 Old Madison Pike, Suite 108, Huntsville, Alabama 35806

1.2 Product Feature of Equipment Under Test

Product Feature	
Equipment	Tablet PC
Model Name	GQY56XZ
FCC ID	2ABO6-0725
EUT supports Radios application	GSM/EGPRS/WCDMA/HSPA/LTE **<2.4GHz band>** WLAN 11b/g/n HT20 WLAN 11ac VHT20 Bluetooth v4.0 EDR/LE **<5GHz band>** WLAN 11a/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.3 Product Specification subjective to this standard

<table>
<tr><th colspan="2">Product Specification subjective to this standard</th></tr>
<tr><td>Tx/Rx Channel Frequency Range</td><td>5745 MHz ~ 5825 MHz</td></tr>
<tr><td>Maximum Output Power</td><td>802.11a : 16.0 dBm / 0.0398 W
802.11n HT20 : 16.0 dBm / 0.0398 W
802.11n HT40 : 15.8 dBm / 0.0380 W
802.11ac VHT20: 16.0 dBm / 0.0398 W
802.11ac VHT40: 16.0 dBm / 0.0398 W
802.11ac VHT80: 15.7 dBm / 0.0372 W</td></tr>
<tr><td>Type of Modulation</td><td>802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)
802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)</td></tr>
<tr><td>Antenna Type</td><td>Ant. 1 : Fixed internal Antenna with gain -0.60 dBi
Ant. 2 : Fixed internal Antenna with gain 3.20 dBi</td></tr>
<tr><td>Antenna Function Description</td><td>
<table>
<tr><td></td><td>Chain
Ant 1</td><td>Chain
Ant 2</td></tr>
<tr><td>802.11a
MIMO</td><td>V</td><td>V</td></tr>
<tr><td>802.11n/ac
MIMO</td><td>V</td><td>V</td></tr>
</table>
</td></tr>
</table>

1.4 Modification of EUT

No modifications are made to the EUT during all test items.

1.5 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1022 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

<table>
<tr><td>Test Site</td><td colspan="3">SPORTON INTERNATIONAL INC.</td></tr>
<tr><td>Test Site Location</td><td colspan="3">No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park,
Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.
TEL: +886-3-327-3456
FAX: +886-3-328-4978</td></tr>
<tr><td rowspan="2">Test Site No.</td><td colspan="3">Sporton Site No.</td></tr>
<tr><td>TH02-HY</td><td>CO05-HY</td><td>03CH08-HY</td></tr>
</table>

Note: The test site complies with ANSI C63.4 2003 requirement.

1.6 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15 Subpart E
- FCC KDB 789033 D02 General UNII Test Procedures New Rules v01
- FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ANSI C63.4-2003

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.

2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 kHz to 30 MHz) and radiated emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Z plane) were recorded in this report.

The final configuration from all the combinations and the worst-case data rates were investigated by measuring the maximum power across all the data rates and modulation modes under section 2.2.

Based on the worst configuration found above, the RF power setting is set individually to meet FCC compliance limit for the final conducted and radiated tests shown in section 2.3.

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5725-5850 MHz Band IV (U-NII-3)	149	5745	157	5785
	151*	5755	159*	5795
	153	5765	161	5805
	155#	5775	165	5825

Note:

1. The above Frequency and Channel in "*" were 802.11n HT40 and 802.11ac VHT40.
2. The above Frequency and Channel in "#" were 802.11ac VHT80.

2.2 Pre-Scanned RF Power

Preliminary tests were performed in different data rate and data rate associated with the highest power were chosen for full test in the following tables. Final Output Power equals to Measured Output Power adds the duty factor.

MIMO <Ant. 1+2>

5GHz 802.11a mode								
Data Rate	**6M bps**	**9M bps**	**12M bps**	**18M bps**	**24M bps**	**36M bps**	**48M bps**	**54M bps**
Average Power (dBm)	**16.0**	15.8	15.9	15.8	15.6	15.7	15.9	15.9

5GHz 802.11n HT20 mode								
Data Rate	**MCS 0**	**MCS 1**	**MCS 2**	**MCS 3**	**MCS 4**	**MCS 5**	**MCS 6**	**MCS 7**
Average Power (dBm)	**16.0**	15.9	15.7	15.9	15.9	16.0	15.9	16.0
Data Rate	**MCS8**	**MCS9**	**MCS10**	**MCS 11**	**MCS12**	**MCS13**	**MCS14**	**MCS15**
Average Power (dBm)	16.0	15.9	15.8	15.9	15.9	15.9	15.9	15.9

5GHz 802.11n HT40 mode								
Data Rate	**MCS 0**	**MCS 1**	**MCS 2**	**MCS 3**	**MCS 4**	**MCS 5**	**MCS 6**	**MCS 7**
Average Power (dBm)	**15.8**	15.4	15.4	15.6	15.6	15.5	15.6	15.6
Data Rate	**MCS8**	**MCS9**	**MCS10**	**MCS 11**	**MCS12**	**MCS13**	**MCS14**	**MCS15**
Average Power (dBm)	15.7	15.6	15.6	15.6	15.6	15.6	15.7	15.5

5GHz 802.11ac VHT20 mode									
Data Rate	Nss=1								
	MCS 0	MCS 1	MCS 2	MCS 3	MCS 4	MCS 5	MCS 6	MCS 7	MCS 8
Average Power (dBm)	16.0	15.7	15.5	15.8	15.8	15.9	15.9	15.8	15.9
Data Rate	Nss=2								
	MCS 0	MCS 1	MCS 2	MCS 3	MCS 4	MCS 5	MCS 6	MCS 7	MCS 8
Average Power (dBm)	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9

5GHz 802.11ac VHT40 mode										
Data Rate	Nss=1									
	MCS 0	MCS 1	MCS 2	MCS 3	MCS 4	MCS 5	MCS 6	MCS 7	MCS 8	MCS 9
Average Power (dBm)	16.0	15.9	15.6	15.8	15.9	15.8	15.8	15.8	15.8	15.8
Data Rate	Nss=2									
	MCS 0	MCS 1	MCS 2	MCS 3	MCS 4	MCS 5	MCS 6	MCS 7	MCS 8	MCS 9
Average Power (dBm)	15.9	15.9	15.7	15.9	16.0	16.0	15.9	15.9	15.9	15.7

5GHz 802.11ac VHT80 mode										
Data Rate	Nss=1									
	MCS 0	MCS 1	MCS 2	MCS 3	MCS 4	MCS 5	MCS 6	MCS 7	MCS 8	MCS 9
Average Power (dBm)	15.7	15.5	15.6	15.5	15.5	15.6	15.6	15.6	15.3	15.3
Data Rate	Nss=2									
	MCS 0	MCS 1	MCS 2	MCS 3	MCS 4	MCS 5	MCS 6	MCS 7	MCS 8	MCS 9
Average Power (dBm)	15.5	15.5	15.4	15.4	15.2	15.3	15.3	15.2	14.7	14.7

Note: MIMO Ant. 1+2 is a calculated result from sum of the power MIMO Ant. 1 and MIMO Ant. 2.

2.3 Test Mode

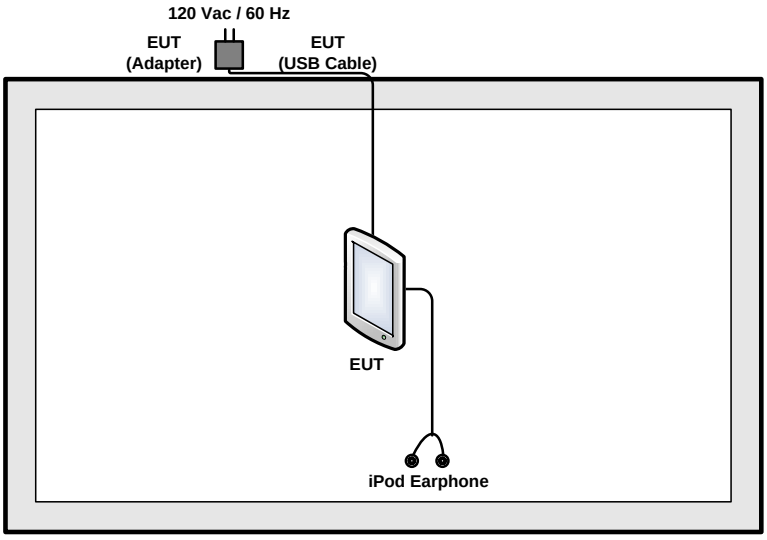
Final results of test modes, data rates and test channels are shown as following table.

Test Cases				
	Test Items	**Mode**	**Data rate**	**Test Channel**
Conducted TCs	**6dB Bandwidth Power Spectral Density**	**802.11a**	**6 Mbps**	**149/157/165**
		802.11n HT20	**MCS0**	**149/157/165**
		802.11n HT40	**MCS0**	**151/159**
		802.11ac VHT20	**MCS0**	**149/157/165**
		802.11ac VHT40	**MCS0**	**151/159**
		802.11ac VHT80	**MCS0**	**155**
	Output Power	**802.11a**	**6 Mbps**	**149/157/165**
		802.11n HT20	**MCS0**	**149/157/165**
		802.11n HT40	**MCS0**	**151/159**
		802.11ac VHT20	**MCS0**	**149/157/165**
		802.11ac VHT40	**MCS0**	**151/159**
		802.11ac VHT80	**MCS0**	**155**
	Frequency Stability	**802.11a**	**6 Mbps**	**149**

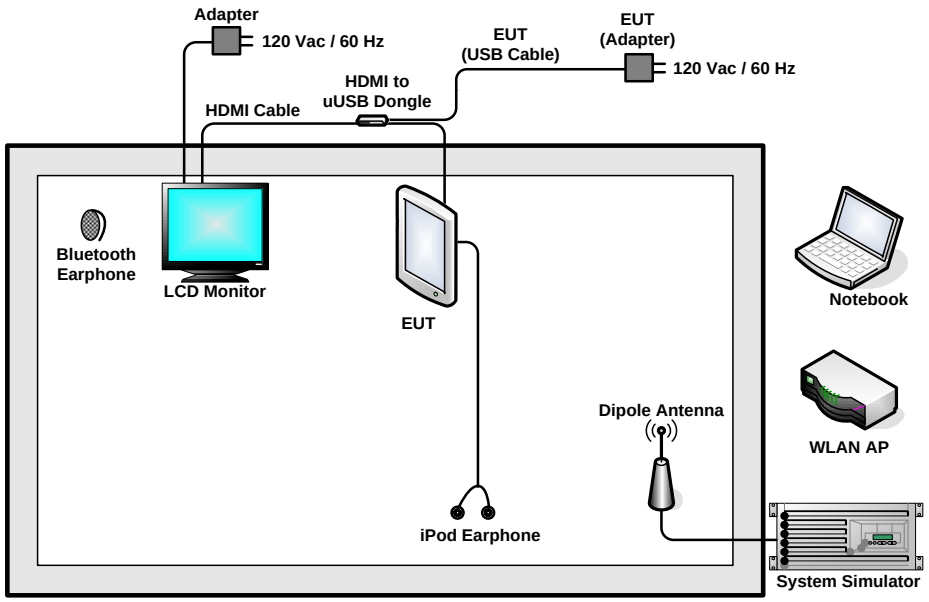
Test Cases				
Radiated TCs	Test Items	Mode	Data rate	Test Channel
	Radiated Band Edge	802.11a	6 Mbps	149/165
		802.11n HT20	MCS0	149/165
		802.11n HT40	MCS0	151/159
		802.11ac VHT20	MCS0	149/165
		802.11ac VHT40	MCS0	151/159
		802.11ac VHT80	MCS0	155
	Radiated Spurious Emission	802.11a	6 Mbps	149/157/165
		802.11n HT20	MCS0	149/157/165
		802.11n HT40	MCS0	151/159
		802.11ac VHT20	MCS0	149/157/165
		802.11ac VHT40	MCS0	151/159
		802.11ac VHT80	MCS0	155
AC Conducted Emission	Mode 1 : GSM850 (GPRS class 8) Idle + WLAN (5GHz) Link + Bluetooth Link + Earphone + HDMI Cable with Monitor + HDMI to uUSB Dongle + USB Cable (Charging from Adapter) + Camera (Front) <Fig. 1> Mode 2 : GSM850 (GPRS class 8) Idle + WLAN (5GHz) Link + Earphone + HDMI Cable with Monitor + HDMI to uUSB Dongle + USB Cable (Charging from Adapter) + Camera (Front) <Fig. 2>			
Remark: The worst case of conducted emission is mode 2; only the test data of it was reported.				

2.4 Connection Diagram of Test System

<WLAN Tx Mode>

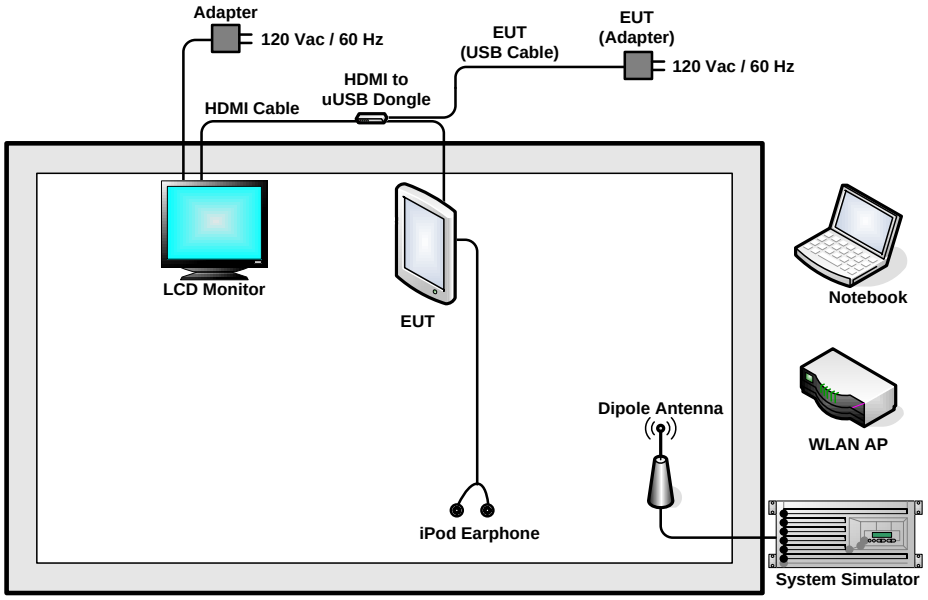


<EUT with Adapter and Bluetooth Earphone Mode for AC Conducted Emission>



<Fig. 1>

<EUT with Adapter Mode for AC Conducted Emission>



<Fig. 2>

2.5 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
3.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
4.	Notebook	DELL	Latitude E6320	FCC DoC/ Contains FCC ID: QDS-BRCM1054	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	LCD Monitor	DELL	U2410	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
6.	HDMI to uUSB Dongle	N/A	PS56GR	N/A	Unshielded, 0.17 m	N/A
7.	iPod Earphone	Apple	N/A	Verification	Unshielded, 1.0 m	N/A

2.6 EUT Operation Test Setup

For WLAN function, programmed RF utility, “ADB” installed in the notebook make the EUT provide functions like channel selection and power level for continuous transmitting and receiving signals.

2.7 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example :

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).

= 4.2 + 10 = 14.2 (dB)

3 Test Result

3.1 6dB Bandwidth Measurement

3.1.1 Description of 6dB Bandwidth

This section is for reporting purpose only.

There is no restriction limits for bandwidth.

3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01. Section C) Emission bandwidth for the band 5.725-5.85GHz
2. Set RBW = 100kHz.
3. Set the VBW ≥ 3 x RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 6 dB down from the peak of the emission.
7. Measure and record the results in the test report.

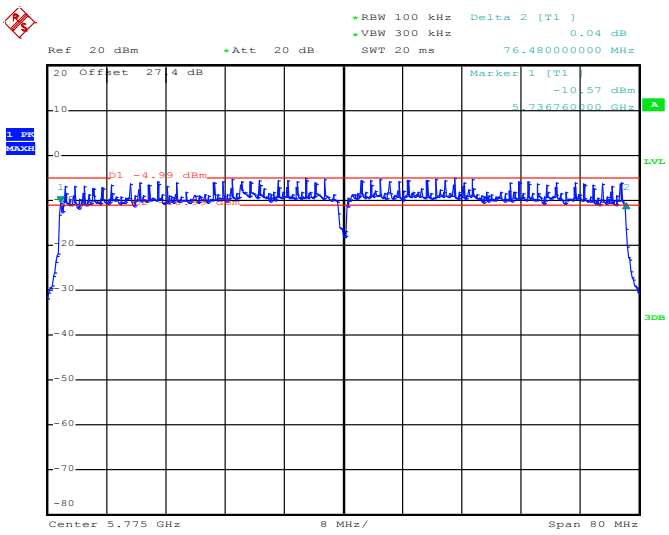
3.1.4 Test Setup

3.1.5 Test Result of 6dB Bandwidth

Test Band :	5GHz band IV	Temperature :	21~26℃
Test Engineer :	Bill Kuo and Stuart Lin	Relative Humidity :	45~54%

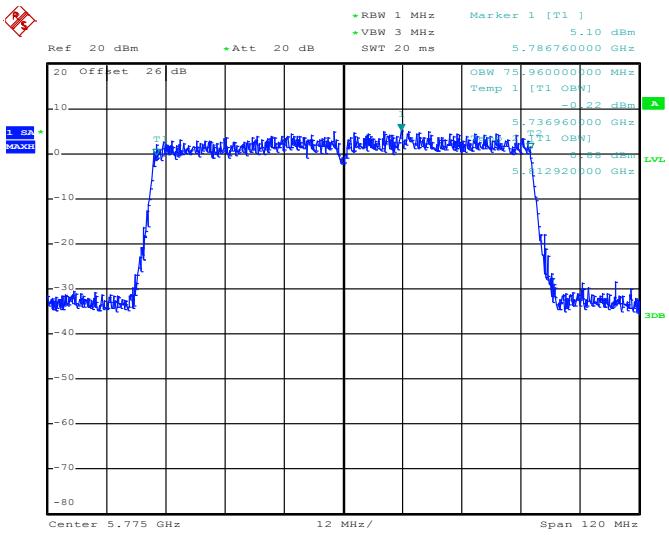
Mod.	Data Rate	N_{TX}	Channel	Freq. (MHz)	99% Bandwidth (MHz)		6dB Bandwidth (MHz)		IC 99% Bandwidth EIRP Limit (dBm)		FCC 6 dB Bandwidth Min. Limit (MHz)	
					Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2
11a	6Mbps	2	149	5745	18.20	18.10	16.32	16.32	29.58		0.5	
11a	6Mbps	2	157	5785	18.15	18.25	16.34	16.32	29.59		0.5	
11a	6Mbps	2	165	5825	18.05	18.05	16.36	16.36	29.56		0.5	
HT20	MCS0	2	149	5745	19.05	18.80	17.58	17.60	29.74		0.5	
HT20	MCS0	2	157	5785	19.00	18.95	17.56	17.60	29.78		0.5	
HT20	MCS0	2	165	5825	18.95	19.00	17.60	17.60	29.78		0.5	
HT40	MCS0	2	151	5755	36.70	36.80	36.32	36.36	30.00		0.5	
HT40	MCS0	2	159	5795	36.80	36.60	36.24	36.24	30.00		0.5	
VHT20	MCS0	2	149	5745	19.05	18.90	17.58	17.58	29.76		0.5	
VHT20	MCS0	2	157	5785	19.10	18.85	17.56	17.60	29.75		0.5	
VHT20	MCS0	2	165	5825	18.90	18.85	17.56	17.60	29.75		0.5	
VHT40	MCS0	2	151	5755	36.60	36.70	36.36	36.40	30.00		0.5	
VHT40	MCS0	2	159	5795	36.70	36.70	36.32	36.32	30.00		0.5	
VHT80	MCS0	2	155	5775	75.84	75.96	76.16	76.48	30.00		0.5	

Maximum 6dB Bandwidth



Date: 23.JUL.2014 04:34:39

Maximum 99% Occupied Bandwidth



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Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

3.2 Maximum Conducted Output Power Measurement

3.2.1 Limit of Maximum Conducted Output Power

<FCC 14-30 CFR 15.407>

For the band 5.725–5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

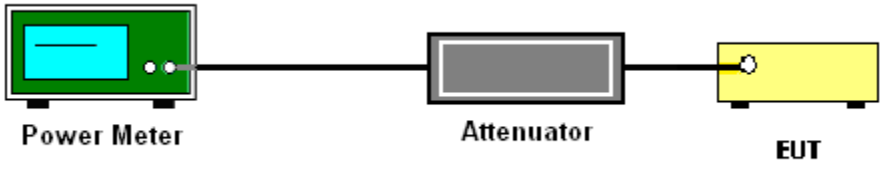
3.2.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01.

Method PM (Measurement using an RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit continuously with a consistent duty cycle at its maximum power control level.
3. Measure the average power of the transmitter, and the average power is corrected with duty factor, 10 log(1/x), where x is the duty cycle.

3.2.4 Test Setup



3.2.5 Test Result of Maximum Conducted Output Power

Test Band :	5GHz band IV	Temperature :	21~26℃
Test Engineer :	Bill Kuo and Stuart Lin	Relative Humidity :	45~54%

Mod.	Data Rate	N_{TX}	CH.	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)			FCC Power Limit (dBm)		DG (dBi)		-	Pass /Fail
					Ant. 1	Ant. 2	Ant. 1	Ant. 2	Sum Power	Ant. 1	Ant. 2	Ant. 1	Ant. 2		
11a	6Mbps	2	149	5745	0.30	0.28	12.2	12.6	15.4	30.00		4.58			Pass
11a	6Mbps	2	157	5785	0.30	0.28	12.1	12.5	15.3	30.00		4.58			Pass
11a	6Mbps	2	165	5825	0.30	0.28	13.0	13.0	16.0	30.00		4.58			Pass
HT20	MCS0	2	149	5745	0.31	0.33	12.5	12.8	15.7	30.00		4.58			Pass
HT20	MCS0	2	157	5785	0.31	0.33	13.0	13.0	16.0	30.00		4.58			Pass
HT20	MCS0	2	165	5825	0.31	0.33	13.0	13.0	16.0	30.00		4.58			Pass
HT40	MCS0	2	151	5755	0.61	0.61	11.8	12.4	15.1	30.00		4.58			Pass
HT40	MCS0	2	159	5795	0.61	0.61	12.7	13.0	15.8	30.00		4.58		-	Pass
VHT20	MCS0	2	149	5745	0.31	0.32	12.4	12.8	15.6	30.00		4.58			Pass
VHT20	MCS0	2	157	5785	0.31	0.32	12.9	13.0	16.0	30.00		4.58			Pass
VHT20	MCS0	2	165	5825	0.31	0.32	12.9	13.0	16.0	30.00		4.58			Pass
VHT40	MCS0	2	151	5755	0.60	0.60	11.9	12.4	15.2	30.00		4.58			Pass
VHT40	MCS0	2	159	5795	0.60	0.60	12.8	13.0	16.0	30.00		4.58			Pass
VHT80	MCS0	2	155	5775	1.14	1.18	12.5	13.0	15.7	30.00		4.58			Pass

Note:

1. Final Output Power equals to Measured Output Power adds the duty factor.
2. Sum Power is a calculated result from sum of the Ant 1 and Ant 2.

3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

<FCC 14-30 CFR 15.407>

For the band 5.725–5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.3.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.3.3 Test Procedures

The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01.
Section F) Maximum power spectral density.

 # Method SA-2 #

(trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

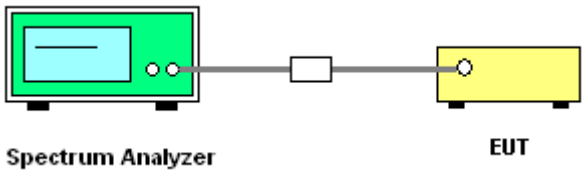
1. The testing follows Method SA-2 of FCC KDB 789033 D01 General UNII Test Procedures v01r03.
   - Measure the duty cycle.
   - Set span to encompass the entire emission bandwidth (EBW) of the signal.
   - Set RBW = 300 kHz.
   - Set VBW ≥ 1 MHz.
   - Number of points in sweep ≥ 2 Span / RBW.
   - Sweep time = auto.
   - Detector = RMS
   - Trace average at least 100 traces in power averaging mode.
   - Add 10 log(500kHz/RBW) to the test result.
   - Add 10 log(1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add 10 log(1/0.25) = 6 dB if the duty cycle is 25 percent.

2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and record it.
4. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

Method (1): Measure and sum the spectra across the outputs.

The total final Power Spectral Density is from a device with 2 transmitter outputs. The spectrum measurements of the individual outputs are all performed with the same span and number of points, the spectrum value in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 to obtain the value for the first frequency bin of the summed spectrum.

3.3.4 Test Setup



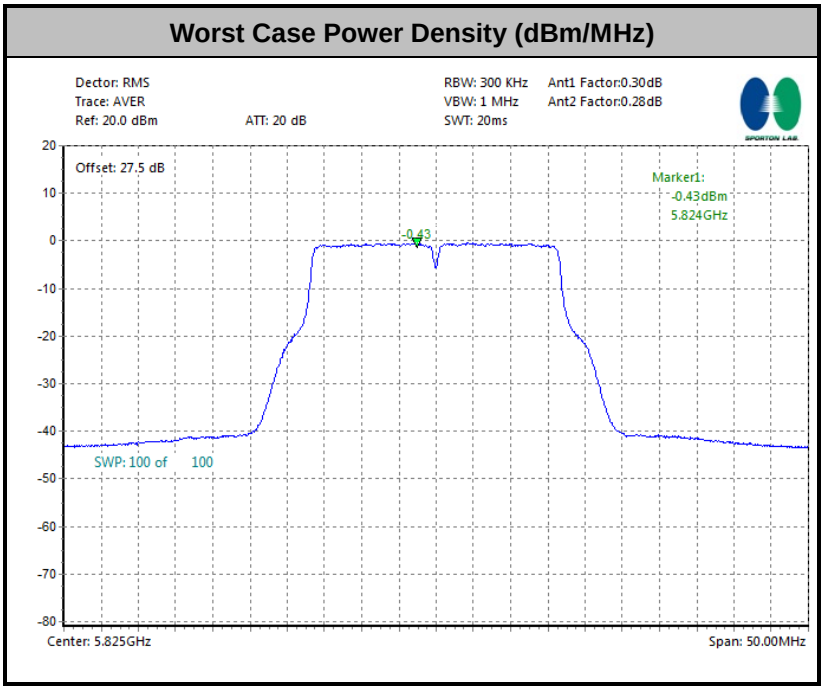
3.3.5 Test Result of Power Spectral Density

Test Band :	5GHz band IV	Temperature :	21~26℃
Test Engineer :	Bill Kuo and Stuart Lin	Relative Humidity :	45~54%

Mod.	Data Rate	NTX	Channel	Freq. (MHz)	Duty Factor (dB)		10log (500kHz /RBW) Factor (dB)		Average Power Density (dBm/500kHz)			Average PSD Limit (dBm/500kHz)		DG (dBi)		Pass /Fail
					Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
11a	6Mbps	2	149	5745	0.30	0.28	2.22				0.76	30.00		5.58		Pass
11a	6Mbps	2	157	5785	0.30	0.28	2.22				0.83	30.00		5.58		Pass
11a	6Mbps	2	165	5825	0.30	0.28	2.22				1.79	30.00		5.58		Pass
HT20	MCS0	2	149	5745	0.31	0.33	2.22				0.25	30.00		5.58		Pass
HT20	MCS0	2	157	5785	0.31	0.33	2.22				1.24	30.00		5.58		Pass
HT20	MCS0	2	165	5825	0.31	0.33	2.22				1.50	30.00		5.58		Pass
HT40	MCS0	2	151	5755	0.61	0.61	2.22				-3.14	30.00		5.58		Pass
HT40	MCS0	2	159	5795	0.61	0.61	2.22				-1.75	30.00		5.58		Pass
VHT20	MCS0	2	149	5745	0.31	0.32	2.22				0.44	30.00		5.58		Pass
VHT20	MCS0	2	157	5785	0.31	0.32	2.22				1.20	30.00		5.58		Pass
VHT20	MCS0	2	165	5825	0.31	0.32	2.22				1.37	30.00		5.58		Pass
VHT40	MCS0	2	151	5755	0.60	0.60	2.22				-3.33	30.00		5.58		Pass
VHT40	MCS0	2	159	5795	0.60	0.60	2.22				-2.01	30.00		5.58		Pass
VHT80	MCS0	2	155	5775	1.14	1.18	2.22				1.52	30.00		5.58		Pass

Note: Sum PSD is a bin-by-bin combined result of Ant 1 and Ant 2.

Worst Case Power Density (dBm/MHz)



3.4 Unwanted Emissions Measurement

This section as specified in FCC Part 15.407(b) is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement. The unwanted emissions shall comply with 15.407(b)(1) to (6), and restricted bands per FCC Part15.205.

3.4.1 Limit of Unwanted Emissions

(1) For transmitters operating in the 5725-5850 MHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17 dBm/MHz (78.3dBμV/m); for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of -27 dBm/MHz (68.3dBμV/m).

(2) Unwanted spurious emissions fallen in restricted bands per FCC Part15.205 shall comply with the general field strength limits set forth in § 15.209 as below table,

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

Note: The following formula is used to convert the EIRP to field strength.

$$E=\frac{1000000\sqrt{30P}}{3}$$ μV/m, where P is the eirp (Watts)

EIRP (dBm)	Field Strength at 3m (dBμV/m)
-17	78.3
- 27	68.3

(3) KDB789033 v01r03 H)2)c)(i) As specified in 15.407(b), emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of -27 dBm/MHz (or -17 dBm/MHz as specified in 15.407(b)(4)). However, an out-of-band emission that complies with both the average and peak limits of 15.209 is not required to satisfy the -27 dBm/MHz or -17 dBm/MHz peak emission limit.

3.4.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.4.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01. Section G) Unwanted emissions measurement.

   (1) Procedure for Unwanted Emissions Measurements Below 1000MHz

   - RBW = 120 kHz
   - VBW = 300 kHz
   - Detector = Peak
   - Trace mode = max hold

   (2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz

   - RBW = 1 MHz
   - VBW ≥ 3 MHz
   - Detector = Peak
   - Sweep time = auto
   - Trace mode = max hold

   (3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

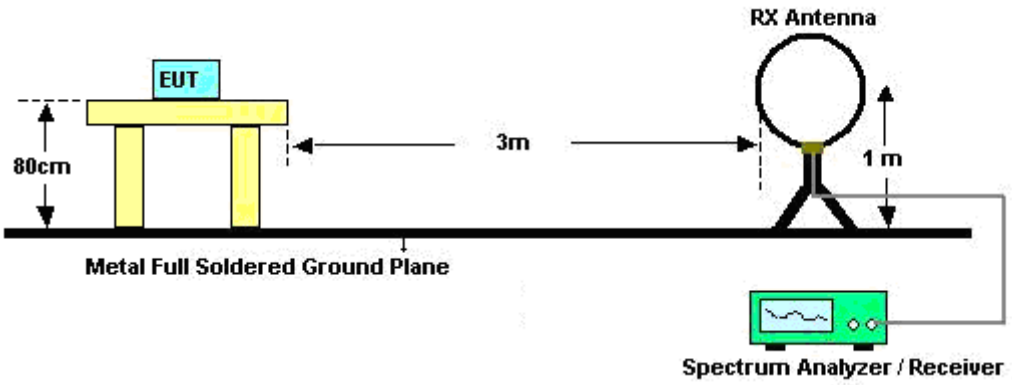
   - RBW = 1 MHz
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
1+2	802.11a for Ant 1	93.23	1432	0.70	1kHz
1+2	802.11a for Ant 2	93.72	1432	0.70	
1+2	802.11n HT20 for Ant 1	93.06	1340	0.75	1kHz
1+2	802.11n HT20 for Ant 2	92.78	1336	0.75	
1+2	802.11n HT40 for Ant 1	86.98	668	1.50	3kHz
1+2	802.11n HT40 for Ant 2	86.98	668	1.50	
1+2	802.11ac VHT20 for Ant 1	93.06	1340	0.75	1kHz
1+2	802.11ac VHT20 for Ant 2	92.82	1344	0.74	
1+2	802.11ac VHT40 for Ant 1	87.05	672	1.49	3kHz
1+2	802.11ac VHT40 for Ant 2	87.11	676	1.48	
1+2	802.11ac VHT80 for Ant 1	76.85	332	3.01	10kHz
1+2	802.11ac VHT80 for Ant 2	76.15	332	3.01	

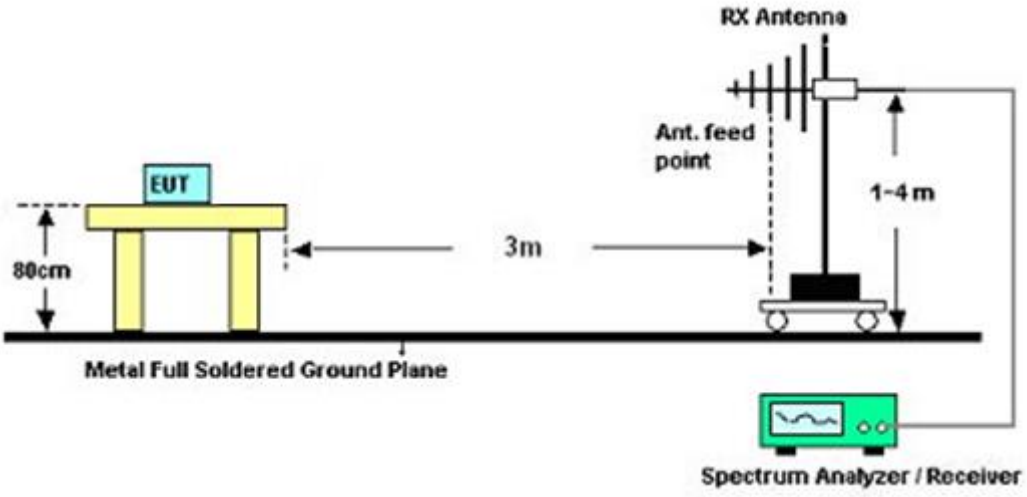
2. The EUT was placed on a rotatable table top 0.8 meter above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

3.4.4 Test Setup

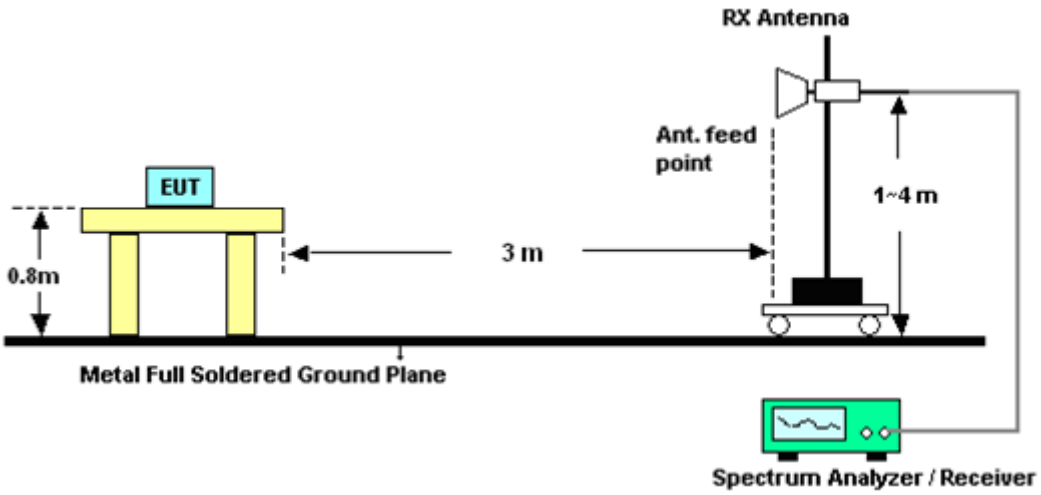
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.4.5 Test Results of Radiated Emissions (9 kHz ~ 30 MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

3.4.6 Test Result of Radiated Band Edges

MIMO <Ant. 1+2>

Test Mode :	802.11a	**Temperature :**	22~24°C
Test Channel :	149	**Relative Humidity :**	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	**Level (dBµV/m)**	**Over Limit (dB)**	**Limit Line (dBµV/m)**	**Read Level (dBµV)**	**Antenna Factor (dB)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Ant Pos (cm)**	**Table Pos (deg)**	**Remark**
5712.2	61.26	-7.04	68.3	49.26	35.69	10.7	34.39	100	153	Peak
5724.84	67.67	-10.63	78.3	55.58	35.71	10.77	34.39	100	153	Peak

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	**Level (dBµV/m)**	**Over Limit (dB)**	**Limit Line (dBµV/m)**	**Read Level (dBµV)**	**Antenna Factor (dB)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Ant Pos (cm)**	**Table Pos (deg)**	**Remark**
5714.28	60.24	-8.06	68.3	48.24	35.69	10.7	34.39	113	166	Peak
5723.56	64.06	-14.24	78.3	51.97	35.71	10.77	34.39	113	166	Peak

Test Mode :	802.11a	**Temperature :**	22~24°C
Test Channel :	165	**Relative Humidity :**	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	**Level (dBµV/m)**	**Over Limit (dB)**	**Limit Line (dBµV/m)**	**Read Level (dBµV)**	**Antenna Factor (dB)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Ant Pos (cm)**	**Table Pos (deg)**	**Remark**
5850.96	61.38	-16.92	78.3	48.82	35.88	11.11	34.43	107	151	Peak
5860.88	59.34	-8.96	68.3	46.7	35.91	11.17	34.44	107	151	Peak

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	**Level (dBµV/m)**	**Over Limit (dB)**	**Limit Line (dBµV/m)**	**Read Level (dBµV)**	**Antenna Factor (dB)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Ant Pos (cm)**	**Table Pos (deg)**	**Remark**
5850.88	59.63	-18.67	78.3	47.07	35.88	11.11	34.43	112	161	Peak
5861.92	59.72	-8.58	68.3	47.08	35.91	11.17	34.44	112	161	Peak

Test Mode :	802.11n HT20	Temperature :	22~24°C
Test Channel :	149	Relative Humidity :	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5712.84	59.5	-8.8	68.3	47.5	35.69	10.7	34.39	100	150	Peak
5723.24	69.6	-8.7	78.3	57.51	35.71	10.77	34.39	100	150	Peak

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5713.8	60.68	-7.62	68.3	48.68	35.69	10.7	34.39	106	18	Peak
5722.92	67.44	-10.86	78.3	55.35	35.71	10.77	34.39	106	18	Peak

Test Mode :	802.11n HT20	Temperature :	22~24°C
Test Channel :	165	Relative Humidity :	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5850	62.39	-15.91	78.3	49.83	35.88	11.11	34.43	108	149	Peak
5864.16	59.42	-8.88	68.3	46.78	35.91	11.17	34.44	108	149	Peak

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5850	62.27	-16.03	78.3	49.71	35.88	11.11	34.43	103	163	Peak
5877.92	59.02	-9.28	68.3	46.36	35.93	11.17	34.44	103	163	Peak

Test Mode :	802.11n HT40	Temperature :	22~24°C
Test Channel :	151	Relative Humidity :	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5710.36	67.54	-0.76	68.3	55.54	35.69	10.7	34.39	100	150	Peak
5723.16	68.2	-10.1	78.3	56.11	35.71	10.77	34.39	100	150	Peak
5851.04	58.61	-19.69	78.3	46.05	35.88	11.11	34.43	100	150	Peak
5862	56.98	-11.32	68.3	44.34	35.91	11.17	34.44	100	150	Peak

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5713.8	65.91	-2.39	68.3	53.91	35.69	10.7	34.39	115	11	Peak
5722.28	67.58	-10.72	78.3	55.49	35.71	10.77	34.39	115	11	Peak
5851.2	57.76	-20.54	78.3	45.2	35.88	11.11	34.43	115	11	Peak
5863.28	57.13	-11.17	68.3	44.49	35.91	11.17	34.44	115	11	Peak

Test Mode :	802.11n HT40	Temperature :	22~24°C
Test Channel :	159	Relative Humidity :	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5713.08	59.25	-9.05	68.3	47.25	35.69	10.7	34.39	119	152	Peak
5722.84	61.56	-16.74	78.3	49.47	35.71	10.77	34.39	119	152	Peak
5852.88	60.8	-17.5	78.3	48.24	35.88	11.11	34.43	119	152	Peak
5871.2	59.11	-9.19	68.3	46.45	35.93	11.17	34.44	119	152	Peak

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5708.36	58.5	-9.8	68.3	46.5	35.69	10.7	34.39	104	166	Peak
5723	60.88	-17.42	78.3	48.79	35.71	10.77	34.39	104	166	Peak
5851.44	60.36	-17.94	78.3	47.8	35.88	11.11	34.43	104	166	Peak
5864.4	58.66	-9.64	68.3	46.02	35.91	11.17	34.44	104	166	Peak

Test Mode :	802.11ac VHT20	Temperature :	22~24°C
Test Channel :	149	Relative Humidity :	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5713.56	60.02	-8.28	68.3	48.02	35.69	10.7	34.39	119	153	Peak
5722.44	65.43	-12.87	78.3	53.34	35.71	10.77	34.39	119	153	Peak

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5711.4	60.08	-8.22	68.3	48.08	35.69	10.7	34.39	123	170	Peak
5723.96	65.46	-12.84	78.3	53.37	35.71	10.77	34.39	123	170	Peak

Test Mode :	802.11ac VHT20	Temperature :	22~24°C
Test Channel :	165	Relative Humidity :	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5850.08	61.5	-16.8	78.3	48.94	35.88	11.11	34.43	120	153	Peak
5883.68	58.22	-10.08	68.3	45.57	35.93	11.17	34.45	120	153	Peak

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5850.08	61.8	-16.5	78.3	49.24	35.88	11.11	34.43	103	164	Peak
5862.08	59.19	-9.11	68.3	46.55	35.91	11.17	34.44	103	164	Peak

Test Mode :	802.11ac VHT40	Temperature :	22~24°C
Test Channel :	151	Relative Humidity :	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5709.96	67.41	-0.89	68.3	55.41	35.69	10.7	34.39	100	148	Peak
5725	68.4	-9.9	78.3	56.31	35.71	10.77	34.39	100	148	Peak
5851.44	57.31	-20.99	78.3	44.75	35.88	11.11	34.43	100	148	Peak
5871.2	57.01	-11.29	68.3	44.35	35.93	11.17	34.44	100	148	Peak

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5714.44	66.51	-1.79	68.3	54.51	35.69	10.7	34.39	114	167	Peak
5720.92	67.1	-11.2	78.3	55.01	35.71	10.77	34.39	114	167	Peak
5855.12	56.69	-21.61	78.3	44.1	35.91	11.11	34.43	114	167	Peak
5863.6	56.95	-11.35	68.3	44.31	35.91	11.17	34.44	114	167	Peak

Test Mode :	802.11ac VHT40	Temperature :	22~24°C
Test Channel :	159	Relative Humidity :	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5712.92	58.75	-9.55	68.3	46.75	35.69	10.7	34.39	109	154	Peak
5723.32	61	-17.3	78.3	48.91	35.71	10.77	34.39	109	154	Peak
5852.56	60.9	-17.4	78.3	48.34	35.88	11.11	34.43	109	154	Peak
5860.24	60.96	-7.34	68.3	48.32	35.91	11.17	34.44	109	154	Peak

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5713.56	58.67	-9.63	68.3	46.67	35.69	10.7	34.39	112	166	Peak
5719.08	60.48	-17.82	78.3	48.39	35.71	10.77	34.39	112	166	Peak
5852.8	61.19	-17.11	78.3	48.63	35.88	11.11	34.43	112	166	Peak
5861.6	59.5	-8.8	68.3	46.86	35.91	11.17	34.44	112	166	Peak

Test Mode :	802.11ac VHT80	Temperature :	22~24°C
Test Channel :	155	Relative Humidity :	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5697.96	66.47	-1.83	68.3	54.48	35.67	10.7	34.38	118	150	Peak
5720.28	67.05	-11.25	78.3	54.96	35.71	10.77	34.39	118	150	Peak
5850.56	64.25	-14.05	78.3	51.69	35.88	11.11	34.43	118	150	Peak
5860	63.42	-4.88	68.3	50.84	35.91	11.11	34.44	118	150	Peak

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5708.52	65.47	-2.83	68.3	53.47	35.69	10.7	34.39	132	170	Peak
5718.84	65.23	-13.07	78.3	53.14	35.71	10.77	34.39	132	170	Peak
5852.08	62.7	-15.6	78.3	50.14	35.88	11.11	34.43	132	170	Peak
5861.92	62.67	-5.63	68.3	50.03	35.91	11.17	34.44	132	170	Peak

3.4.7 Test Result of Unwanted Radiated Emission (30MHz ~ 10th Harmonic)

MIMO<Ant. 1 + 2>

Test Mode :	802.11a	**Temperature :**	22~24°C
Test Channel :	149	**Relative Humidity :**	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang	**Polarization :**	Horizontal
Remark :	1. 5746 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit. 3. 17235 MHz is not within a restricted band, and satisfies both the average and peak limits of 15.209. 4. No spurious emissions are detected other than listed points as below.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
52.68	14.27	-25.73	40	35.82	7.84	1.06	30.45	-	-	Peak
88.32	27.05	-16.45	43.5	47.7	8.38	1.39	30.42	113	296	Peak
243.57	15.08	-30.92	46	31.39	11.66	2.28	30.25	-	-	Peak
386.1	16.07	-29.93	46	28.06	15.18	2.85	30.02	-	-	Peak
598.9	18.91	-27.09	46	26.28	18.6	3.63	29.6	-	-	Peak
837.6	20.71	-25.29	46	25.52	20.16	4.32	29.29	-	-	Peak
5746	99.98	-	-	87.79	35.74	10.85	34.4	100	153	Average
5746	110.13	-	-	97.94	35.74	10.85	34.4	100	153	Peak
11490	48.87	-5.13	54	52.24	38.69	15.25	57.31	100	0	Peak
17235	43.4	-10.6	54	40.22	41.87	19.22	57.91	100	0	Peak

Test Mode :	802.11a	**Temperature :**	22~24°C
Test Channel :	149	**Relative Humidity :**	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang	**Polarization :**	Vertical
Remark :	1. 5747 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit. 3. 17235 MHz is not within a restricted band, and satisfies both the average and peak limits of 15.209. 4. No spurious emissions are detected other than listed points as below.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
52.41	21.25	-18.75	40	42.8	7.84	1.06	30.45	-	-	Peak
89.94	28.48	-15.02	43.5	48.79	8.7	1.41	30.42	100	73	Peak
118.29	20.39	-23.11	43.5	37.15	12.04	1.6	30.4	-	-	Peak
468	16.66	-29.34	46	26.28	17.08	3.17	29.87	-	-	Peak
710.9	19.66	-26.34	46	26.27	18.92	3.94	29.47	-	-	Peak
911.1	21.86	-24.14	46	25.97	20.5	4.49	29.1	-	-	Peak
5747	99.3	-	-	87.11	35.74	10.85	34.4	113	166	Average
5747	109.48	-	-	97.29	35.74	10.85	34.4	113	166	Peak
11492	49.25	-4.75	54	52.62	38.69	15.25	57.31	100	0	Peak
17235	44.47	-9.53	54	41.29	41.87	19.22	57.91	100	0	Peak

Test Mode :	802.11a	Temperature :	22~24°C
Test Channel :	157	Relative Humidity :	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang	Polarization :	Horizontal
Remark :	1. 5787 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit. 3. 17355 MHz is not within a restricted band, and satisfies both the average and peak limits of 15.209. 4. No spurious emissions are detected other than listed points as below.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5787	99.01	-	-	86.27	35.81	10.93	34	100	146	Average
5787	109.25	-	-	96.51	35.81	10.93	34	100	146	Peak
11572	49.08	-4.92	54	52.33	38.78	15.27	57.3	100	0	Peak
17355	45.7	-8.3	54	42.95	41.71	19.25	58.21	100	0	Peak

Test Mode :	802.11a	Temperature :	22~24°C
Test Channel :	157	Relative Humidity :	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang	Polarization :	Vertical
Remark :	1. 5787 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit. 3. 17355 MHz is not within a restricted band, and satisfies both the average and peak limits of 15.209. 4. No spurious emissions are detected other than listed points as below.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5787	98.98	-	-	86.24	35.81	10.93	34	104	17	Average
5787	109.26	-	-	96.52	35.81	10.93	34	104	17	Peak
11568	49.09	-4.91	54	52.34	38.78	15.27	57.3	100	0	Peak
17355	45.7	-8.3	54	42.95	41.71	19.25	58.21	100	0	Peak

Test Mode :	802.11a	Temperature :	22~24°C
Test Channel :	165	Relative Humidity :	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang	Polarization :	Horizontal
Remark :	1. 5826 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit. 3. 17475 MHz is not within a restricted band, and satisfies both the average and peak limits of 15.209. 4. No spurious emissions are detected other than listed points as below.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5826	100.84	-	-	88.34	35.86	11.06	34.42	107	151	Average
5826	111.17	-	-	98.67	35.86	11.06	34.42	107	151	Peak
11652	38.77	-15.23	54	41.88	38.89	15.3	57.3	100	58	Average
11652	51.24	-22.76	74	54.35	38.89	15.3	57.3	100	58	Peak
17475	47.39	-6.61	54	45.07	41.55	19.28	58.51	100	0	Peak

Test Mode :	802.11a	Temperature :	22~24°C
Test Channel :	165	Relative Humidity :	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang	Polarization :	Vertical
Remark :	1. 5827 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit. 3. 17475 MHz is not within a restricted band, and satisfies both the average and peak limits of 15.209. 4. No spurious emissions are detected other than listed points as below.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5827	100.11	-	-	87.61	35.86	11.06	34.42	112	161	Average
5827	110.39	-	-	97.89	35.86	11.06	34.42	112	161	Peak
11652	49.99	-4.01	54	53.1	38.89	15.3	57.3	100	0	Peak
17475	46.88	-7.12	54	44.56	41.55	19.28	58.51	100	0	Peak

Test Mode :	802.11n HT20	**Temperature :**	22~24°C
Test Channel :	149	**Relative Humidity :**	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang	**Polarization :**	Horizontal
Remark :	1. 5743 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit. 3. 17235 MHz is not within a restricted band, and satisfies both the average and peak limits of 15.209. 4. No spurious emissions are detected other than listed points as below.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
32.43	15.01	-24.99	40	27.12	17.26	0.86	30.23	-	-	Peak
90.21	26.62	-16.88	43.5	46.93	8.7	1.41	30.42	102	162	Peak
299.46	15	-31	46	29.51	13.1	2.54	30.15	-	-	Peak
386.1	16.07	-29.93	46	28.06	15.18	2.85	30.02	-	-	Peak
598.9	18.91	-27.09	46	26.28	18.6	3.63	29.6	-	-	Peak
837.6	20.71	-25.29	46	25.52	20.16	4.32	29.29	-	-	Peak
5743	99.92	-	-	87.73	35.74	10.85	34.4	100	151	Average
5743	109.88	-	-	97.69	35.74	10.85	34.4	100	151	Peak
11492	49.67	-4.33	54	53.04	38.69	15.25	57.31	100	0	Peak
17235	47.06	-6.94	54	43.88	41.87	19.22	57.91	100	0	Peak

Test Mode :	802.11n HT20	**Temperature :**	22~24°C
Test Channel :	149	**Relative Humidity :**	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang	**Polarization :**	Vertical
Remark :	1. 5747 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit. 3. 17235 MHz is not within a restricted band, and satisfies both the average and peak limits of 15.209. 4. No spurious emissions are detected other than listed points as below.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
69.96	19.79	-20.21	40	42.59	6.4	1.23	30.43	-	-	Peak
88.59	27.87	-15.63	43.5	48.52	8.38	1.39	30.42	129	221	Peak
272.19	12.83	-33.17	46	27.89	12.73	2.41	30.2	-	-	Peak
400.1	15.27	-30.73	46	26.62	15.75	2.9	30	-	-	Peak
710.9	19.66	-26.34	46	26.27	18.92	3.94	29.47	-	-	Peak
868.4	21.18	-24.82	46	25.62	20.38	4.39	29.21	-	-	Peak
5747	98.5	-	-	86.31	35.74	10.85	34.4	106	18	Average
5747	109.06	-	-	96.87	35.74	10.85	34.4	106	18	Peak
11488	48.99	-5.01	54	52.36	38.69	15.25	57.31	100	0	Peak
17235	46.73	-7.27	54	43.55	41.87	19.22	57.91	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	22~24°C
Test Channel :	157	Relative Humidity :	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang	Polarization :	Horizontal
Remark :	1. 5783 MHz is fundamental signal which can be ignored. 2. 17355 MHz is not within a restricted band, and satisfies both the average and peak limits of 15.209. 3. No spurious emissions are detected other than listed points as below.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5783	100.06	-	-	87.76	35.79	10.93	34.42	120	154	Average
5783	110.27	-	-	97.97	35.79	10.93	34.42	120	154	Peak
11572	40.03	-13.97	54	43.28	38.78	15.27	57.3	100	57	Average
11572	52.47	-21.53	74	55.72	38.78	15.27	57.3	100	57	Peak
17355	47.41	-6.59	54	44.66	41.71	19.25	58.21	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	22~24°C
Test Channel :	157	Relative Humidity :	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang	Polarization :	Vertical
Remark :	1. 5786 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit. 3. 17355 MHz is not within a restricted band, and satisfies both the average and peak limits of 15.209. 4. No spurious emissions are detected other than listed points as below.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5786	99.02	-	-	86.7	35.81	10.93	34.42	104	13	Average
5786	109.55	-	-	97.23	35.81	10.93	34.42	104	13	Peak
11572	49.17	-4.83	54	52.42	38.78	15.27	57.3	100	0	Peak
17355	46.8	-7.2	54	44.05	41.71	19.25	58.21	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	22~24°C
Test Channel :	165	Relative Humidity :	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang	Polarization :	Horizontal
Remark :	1. 5824 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit. 3. 17475 MHz is not within a restricted band, and satisfies both the average and peak limits of 15.209. 4. No spurious emissions are detected other than listed points as below.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5824	99.58	-	-	87.08	35.86	11.06	34.42	108	149	Average
5824	109.26	-	-	96.76	35.86	11.06	34.42	108	149	Peak
11652	49.01	-4.99	54	52.12	38.89	15.3	57.3	100	0	Peak
17475	46.54	-7.46	54	44.22	41.55	19.28	58.51	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	22~24°C
Test Channel :	165	Relative Humidity :	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang	Polarization :	Vertical
Remark :	1. 5824 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit. 3. 17475 MHz is not within a restricted band, and satisfies both the average and peak limits of 15.209. 4. No spurious emissions are detected other than listed points as below.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5824	99.55	-	-	87.05	35.86	11.06	34.42	103	163	Average
5824	109.9	-	-	97.4	35.86	11.06	34.42	103	163	Peak
11652	48.26	-5.74	54	51.37	38.89	15.3	57.3	100	0	Peak
17475	46.67	-7.33	54	44.35	41.55	19.28	58.51	100	0	Peak

Test Mode :	802.11n HT40	Temperature :	22~24°C
Test Channel :	151	Relative Humidity :	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang	Polarization :	Horizontal
Remark :	1. 5757 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit. 3. 17265 MHz is not within a restricted band, and satisfies both the average and peak limits of 15.209. 4. No spurious emissions are detected other than listed points as below.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5757	93.48	-	-	81.28	35.76	10.85	34.41	100	150	Average
5757	102.54	-	-	90.34	35.76	10.85	34.41	100	150	Peak
11511	44.65	-9.35	54	47.99	38.7	15.26	57.3	100	0	Peak
17265	47.89	-6.11	54	44.82	41.83	19.23	57.99	100	0	Peak

Test Mode :	802.11n HT40	Temperature :	22~24°C
Test Channel :	151	Relative Humidity :	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang	Polarization :	Vertical
Remark :	1. 5757 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit. 3. 1940MHz and 17265 MHz are not within a restricted band, and satisfy both the average and peak limits of 15.209. 4. No spurious emissions are detected other than listed points as below.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
1940	48.84	-5.16	54	44.91	31.02	6.85	33.94	200	0	Peak
5757	93.31	-	-	81.11	35.76	10.85	34.41	115	11	Average
5757	102.98	-	-	90.78	35.76	10.85	34.41	115	11	Peak
11511	45.51	-8.49	54	48.85	38.7	15.26	57.3	100	0	Peak
17265	47.89	-6.11	54	44.82	41.83	19.23	57.99	100	0	Peak

Test Mode :	802.11n HT40	**Temperature :**	22~24°C
Test Channel :	159	**Relative Humidity :**	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang	**Polarization :**	Horizontal
Remark :	1. 5793 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit. 3. 17385 MHz is not within a restricted band, and satisfies both the average and peak limits of 15.209. 4. No spurious emissions are detected other than listed points as below.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5793	96.87	-	-	84.48	35.81	11	34.42	119	152	Average
5793	106.3	-	-	93.91	35.81	11	34.42	119	152	Peak
11590	47.34	-6.66	54	50.56	38.8	15.28	57.3	100	0	Peak
17385	47.45	-6.55	54	44.83	41.66	19.26	58.3	100	0	Peak

Test Mode :	802.11n HT40	**Temperature :**	22~24°C
Test Channel :	159	**Relative Humidity :**	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang	**Polarization :**	Vertical
Remark :	1. 5796 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit. 3. 17385 MHz is not within a restricted band, and satisfies both the average and peak limits of 15.209. 4. No spurious emissions are detected other than listed points as below.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5796	96.48	-	-	84.09	35.81	11	34.42	104	166	Average
5796	105.94	-	-	93.55	35.81	11	34.42	104	166	Peak
11592	47.7	-6.3	54	50.92	38.8	15.28	57.3	100	0	Peak
17385	47.82	-6.18	54	45.2	41.66	19.26	58.3	100	0	Peak

Test Mode :	802.11ac VHT20	Temperature :	22~24°C
Test Channel :	149	Relative Humidity :	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang	Polarization :	Horizontal
Remark :	1. 5747 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit. 3. 17235 MHz is not within a restricted band, and satisfies both the average and peak limits of 15.209. 4. No spurious emissions are detected other than listed points as below.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5747	99.1	-	-	86.91	35.74	10.85	34.4	119	153	Average
5747	108.59	-	-	96.4	35.74	10.85	34.4	119	153	Peak
11488	49.99	-4.01	54	53.36	38.69	15.25	57.31	100	0	Peak
17235	49.09	-4.91	54	45.91	41.87	19.22	57.91	100	0	Peak

Test Mode :	802.11ac VHT20	Temperature :	22~24°C
Test Channel :	149	Relative Humidity :	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang	Polarization :	Vertical
Remark :	1. 5743 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit. 3. 17235 MHz is not within a restricted band, and satisfies both the average and peak limits of 15.209. 4. No spurious emissions are detected other than listed points as below.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5743	98.65	-	-	86.46	35.74	10.85	34.4	123	170	Average
5743	108.07	-	-	95.88	35.74	10.85	34.4	123	170	Peak
11492	49.56	-4.44	54	52.93	38.69	15.25	57.31	100	0	Peak
17235	47.14	-6.86	54	43.96	41.87	19.22	57.91	100	0	Peak

Test Mode :	802.11ac VHT20	Temperature :	22~24°C
Test Channel :	157	Relative Humidity :	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang	Polarization :	Horizontal
Remark :	1. 5786 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit. 3. 17355 MHz is not within a restricted band, and satisfies both the average and peak limits of 15.209. 4. No spurious emissions are detected other than listed points as below.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5786	99.68	-	-	87.36	35.81	10.93	34.42	100	154	Average
5786	109.4	-	-	97.08	35.81	10.93	34.42	100	154	Peak
11571	49.97	-4.03	54	53.22	38.78	15.27	57.3	100	0	Peak
17355	47.14	-6.86	54	44.39	41.71	19.25	58.21	100	0	Peak

Test Mode :	802.11ac VHT20	Temperature :	22~24°C
Test Channel :	157	Relative Humidity :	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang	Polarization :	Vertical
Remark :	1. 5787 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit. 3. 17355 MHz is not within a restricted band, and satisfies both the average and peak limits of 15.209. 4. No spurious emissions are detected other than listed points as below.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5787	99.47	-	-	87.15	35.81	10.93	34.42	122	171	Average
5787	109.45	-	-	97.13	35.81	10.93	34.42	122	171	Peak
11571	49.29	-4.71	54	52.54	38.78	15.27	57.3	100	0	Peak
17355	47.79	-6.21	54	45.04	41.71	19.25	58.21	100	0	Peak

Test Mode :	802.11ac VHT20	Temperature :	22~24°C
Test Channel :	165	Relative Humidity :	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang	Polarization :	Horizontal
Remark :	1. 5823 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit. 3. 17475 MHz is not within a restricted band, and satisfies both the average and peak limits of 15.209. 4. No spurious emissions are detected other than listed points as below.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5823	99.21	-	-	86.71	35.86	11.06	34.42	120	153	Average
5823	109.46	-	-	96.96	35.86	11.06	34.42	120	153	Peak
11650	50.03	-3.97	54	53.16	38.87	15.3	57.3	100	0	Peak
17475	47.42	-6.58	54	45.1	41.55	19.28	58.51	100	0	Peak

Test Mode :	802.11ac VHT20	Temperature :	22~24°C
Test Channel :	165	Relative Humidity :	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang	Polarization :	Vertical
Remark :	1. 5827 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit. 3. 17475 MHz is not within a restricted band, and satisfies both the average and peak limits of 15.209. 4. No spurious emissions are detected other than listed points as below.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5827	99.59	-	-	87.09	35.86	11.06	34.42	103	164	Average
5827	109.55	-	-	97.05	35.86	11.06	34.42	103	164	Peak
11652	49.97	-4.03	54	53.08	38.89	15.3	57.3	100	0	Peak
17475	46.99	-7.01	54	44.67	41.55	19.28	58.51	100	0	Peak

Test Mode :	802.11ac VHT40	**Temperature :**	22~24°C
Test Channel :	151	**Relative Humidity :**	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang	**Polarization :**	Horizontal
Remark :	1. 5757 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit. 3. 17265 MHz is not within a restricted band, and satisfies both the average and peak limits of 15.209. 4. No spurious emissions are detected other than listed points as below.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
52.41	14.73	-25.27	40	36.28	7.84	1.06	30.45	-	-	Peak
87.24	28.22	-11.78	40	49.03	8.22	1.39	30.42	129	301	Peak
262.2	12.31	-33.69	46	26.67	13.5	2.36	30.22	-	-	Peak
435.1	17.49	-28.51	46	27.81	16.55	3.06	29.93	-	-	Peak
611.5	18.56	-27.44	46	25.86	18.62	3.67	29.59	-	-	Peak
811.7	20.44	-25.56	46	25.74	19.8	4.25	29.35	-	-	Peak
5757	94.27	-	-	82.07	35.76	10.85	34.41	100	148	Average
5757	104.55	-	-	92.35	35.76	10.85	34.41	100	148	Peak
11511	46.77	-7.23	54	50.11	38.7	15.26	57.3	100	0	Peak
17265	47.35	-6.65	54	44.28	41.83	19.23	57.99	100	0	Peak

Test Mode :	802.11ac VHT40	**Temperature :**	22~24°C
Test Channel :	151	**Relative Humidity :**	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang	**Polarization :**	Vertical
Remark :	1. 5757 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit. 3. 17265 MHz is not within a restricted band, and satisfies both the average and peak limits of 15.209. 4. No spurious emissions are detected other than listed points as below.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
69.42	22.15	-17.85	40	44.95	6.4	1.23	30.43	-	-	Peak
89.67	29.04	-14.46	43.5	49.35	8.7	1.41	30.42	106	115	Peak
272.19	13.43	-32.57	46	28.49	12.73	2.41	30.2	-	-	Peak
521.9	17.9	-28.1	46	26.87	17.44	3.35	29.76	-	-	Peak
754.3	20.34	-25.66	46	25.95	19.75	4.07	29.43	-	-	Peak
969.9	22.95	-31.05	54	26.17	21	4.69	28.91	-	-	Peak
5757	94.6	-	-	82.4	35.76	10.85	34.41	114	167	Average
5757	103.95	-	-	91.75	35.76	10.85	34.41	114	167	Peak
11511	45.89	-8.11	54	49.23	38.7	15.26	57.3	100	0	Peak
17265	47.27	-6.73	54	44.2	41.83	19.23	57.99	100	0	Peak

Test Mode :	802.11ac VHT40	Temperature :	22~24°C
Test Channel :	159	Relative Humidity :	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang	Polarization :	Horizontal
Remark :	1. 5793 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit. 3. 17385 MHz is not within a restricted band, and satisfies both the average and peak limits of 15.209. 4. No spurious emissions are detected other than listed points as below.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5793	97.2	-	-	84.81	35.81	11	34.42	109	154	Average
5793	106.58	-	-	94.19	35.81	11	34.42	109	154	Peak
11589	48.99	-5.01	54	52.21	38.8	15.28	57.3	100	0	Peak
17385	47.3	-6.7	54	44.68	41.66	19.26	58.3	100	0	Peak

Test Mode :	802.11ac VHT40	Temperature :	22~24°C
Test Channel :	159	Relative Humidity :	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang	Polarization :	Vertical
Remark :	1. 5794 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit. 3. 17385 MHz is not within a restricted band, and satisfies both the average and peak limits of 15.209. 4. No spurious emissions are detected other than listed points as below.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5794	97.09	-	-	84.7	35.81	11	34.42	112	166	Average
5794	106.47	-	-	94.08	35.81	11	34.42	112	166	Peak
11589	47.01	-6.99	54	50.23	38.8	15.28	57.3	100	0	Peak
17385	47.08	-6.92	54	44.46	41.66	19.26	58.3	100	0	Peak

Test Mode :	802.11ac VHT80	**Temperature :**	22~24°C
Test Channel :	155	**Relative Humidity :**	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang	**Polarization :**	Horizontal
Remark :	1. 5772 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit. 3. 17325 MHz is not within a restricted band, and satisfies both the average and peak limits of 15.209. 4. No spurious emissions are detected other than listed points as below.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
31.08	15.39	-24.61	40	26.75	18.02	0.83	30.21	-	-	Peak
88.05	27.27	-16.23	43.5	47.92	8.38	1.39	30.42	100	336	Peak
134.76	12.27	-31.23	43.5	29.14	11.8	1.71	30.38	-	-	Peak
493.2	17.48	-28.52	46	26.66	17.4	3.24	29.82	-	-	Peak
640.2	19.44	-26.56	46	26.14	19.1	3.75	29.55	-	-	Peak
839	20.77	-25.23	46	25.54	20.18	4.33	29.28	-	-	Peak
5772	90.94	-	-	78.63	35.79	10.93	34.41	118	150	Average
5772	100.22	-	-	87.91	35.79	10.93	34.41	118	150	Peak
11550	44.9	-9.1	54	48.17	38.76	15.27	57.3	100	0	Peak
17325	47.55	-6.45	54	44.67	41.76	19.24	58.12	100	0	Peak

Test Mode :	802.11ac VHT80	**Temperature :**	22~24°C
Test Channel :	155	**Relative Humidity :**	46~48%
Test Engineer :	Ivan Chiang and Kyle Jhuang	**Polarization :**	Vertical
Remark :	1. 5779 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit. 3. 17325 MHz is not within a restricted band, and satisfies both the average and peak limits of 15.209. 4. No spurious emissions are detected other than listed points as below.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
78.6	20.8	-19.2	40	43	6.93	1.3	30.43	-	-	Peak
89.4	27.83	-15.67	43.5	48.31	8.54	1.4	30.42	125	268	Peak
280.29	11.86	-34.14	46	26.8	12.8	2.45	30.19	-	-	Peak
352.5	14.94	-31.06	46	27.83	14.44	2.74	30.07	-	-	Peak
675.9	19.52	-26.48	46	26.24	18.94	3.85	29.51	-	-	Peak
952.4	22.32	-23.68	46	25.8	20.83	4.66	28.97	-	-	Peak
5779	89.52	-	-	77.21	35.79	10.93	34.41	132	170	Average
5779	97.77	-	-	85.46	35.79	10.93	34.41	132	170	Peak
11550	44.79	-9.21	54	48.06	38.76	15.27	57.3	100	0	Peak
17325	47.26	-6.74	54	44.38	41.76	19.24	58.12	100	0	Peak

3.5 AC Conducted Emission Measurement

3.5.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

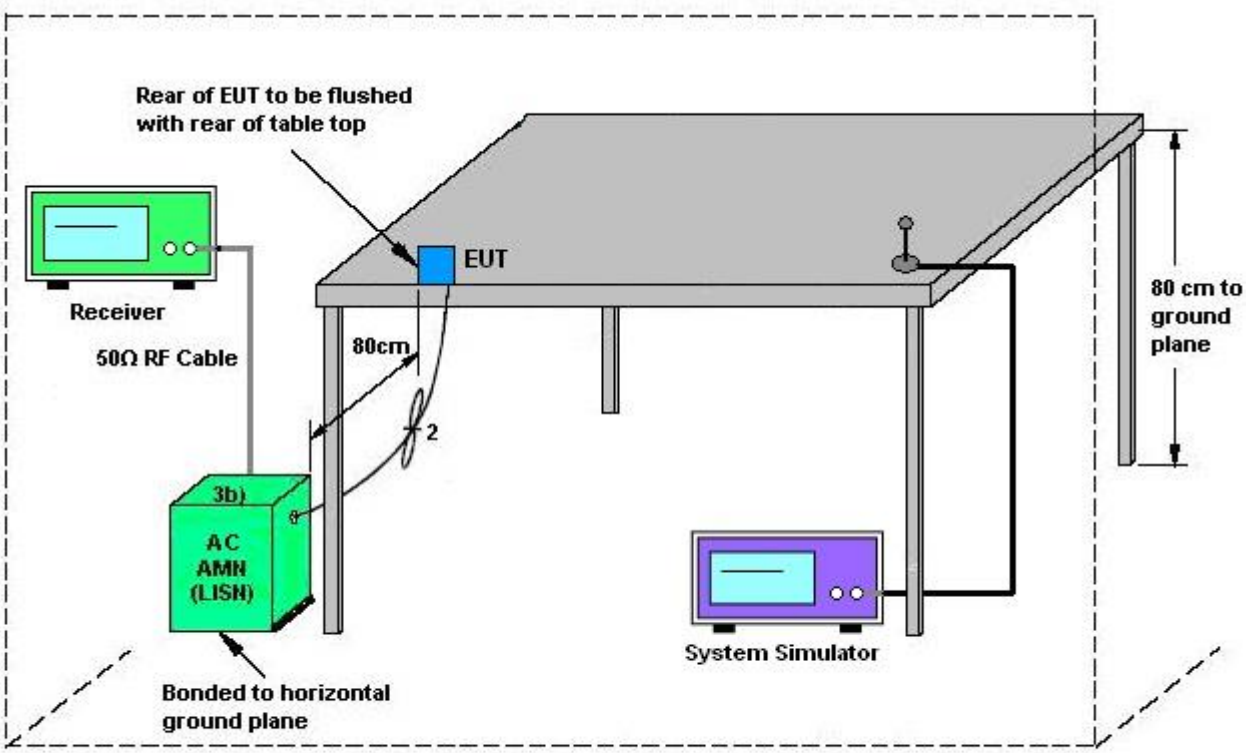
3.5.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.5.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

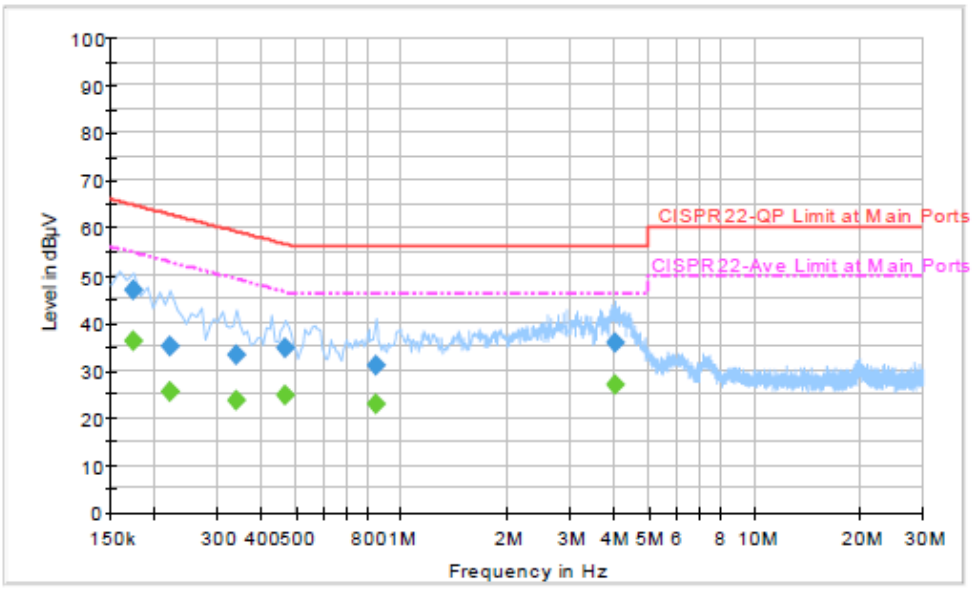
3.5.4 Test Setup



AMN = Artificial mains network (LISN)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network

3.5.5 Test Result of AC Conducted Emission

Test Mode :	Mode 2	Temperature :	20~22℃
Test Engineer :	Kai-Chun Chu	Relative Humidity :	46~48%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 (GPRS class 8) Idle + WLAN (5GHz) Link + Earphone + HDMI Cable with Monitor + HDMI to uUSB Dongle + USB Cable (Charging from Adapter) + Camera (Front)		



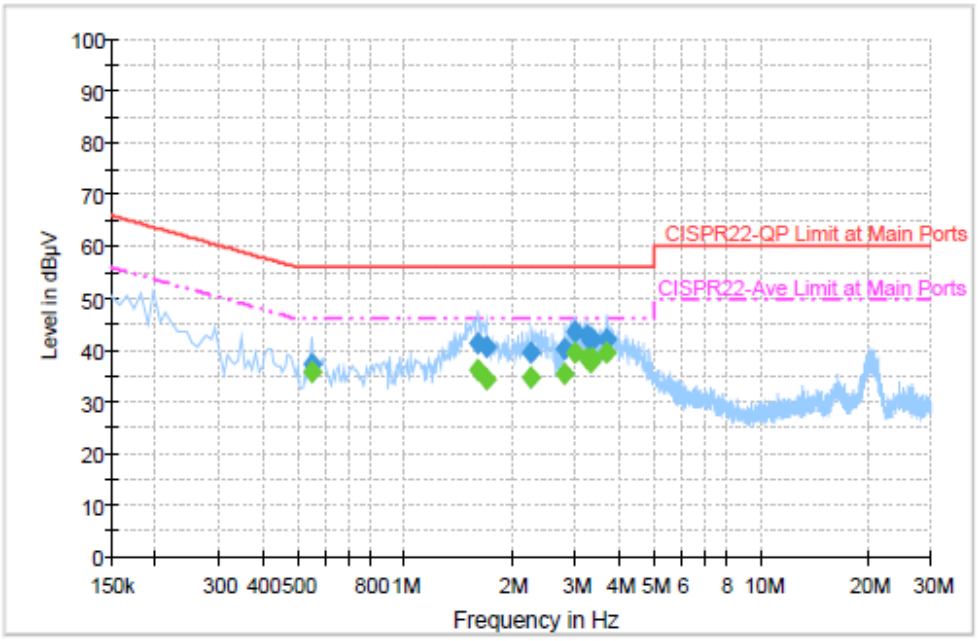
Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.174000	46.7	Off	L1	19.3	18.1	64.8
0.222000	34.9	Off	L1	19.3	27.8	62.7
0.342000	33.3	Off	L1	19.4	25.9	59.2
0.470000	34.7	Off	L1	19.4	21.8	56.5
0.846000	30.9	Off	L1	19.6	25.1	56.0
4.038000	35.7	Off	L1	19.6	20.3	56.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.174000	36.1	Off	L1	19.3	18.7	54.8
0.222000	25.5	Off	L1	19.3	27.2	52.7
0.342000	23.8	Off	L1	19.4	25.4	49.2
0.470000	24.7	Off	L1	19.4	21.8	46.5
0.846000	22.9	Off	L1	19.6	23.1	46.0
4.038000	26.8	Off	L1	19.6	19.2	46.0

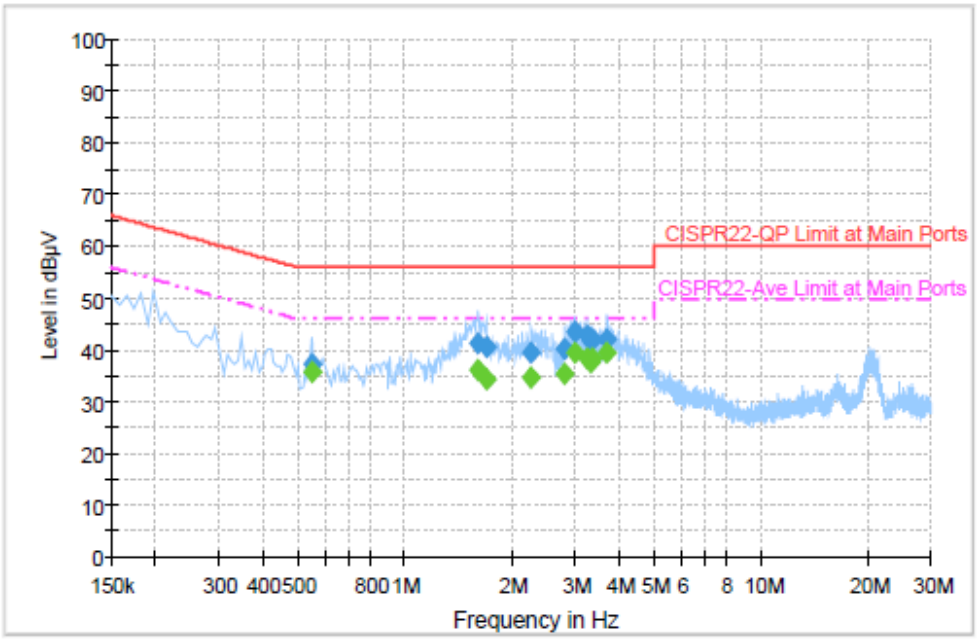
Test Mode :	Mode 2	**Temperature :**	20~22℃
Test Engineer :	Kai-Chun Chu	**Relative Humidity :**	46~48%
Test Voltage :	120Vac / 60Hz	**Phase :**	Neutral
Function Type :	GSM850 (GPRS class 8) Idle + WLAN (5GHz) Link + Earphone + HDMI Cable with Monitor + HDMI to uUSB Dongle + USB Cable (Charging from Adapter) + Camera (Front)		



Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.550000	37.3	Off	N	19.4	18.7	56.0
1.606000	41.3	Off	N	19.5	14.7	56.0
1.694000	40.8	Off	N	19.6	15.2	56.0
2.270000	39.7	Off	N	19.5	16.3	56.0
2.798000	40.2	Off	N	19.6	15.8	56.0
2.990000	43.5	Off	N	19.6	12.5	56.0
3.246000	42.9	Off	N	19.6	13.1	56.0
3.310000	41.6	Off	N	19.6	14.4	56.0
3.382000	42.2	Off	N	19.6	13.8	56.0
3.702000	42.1	Off	N	19.6	13.9	56.0

Test Mode :	Mode 2	**Temperature :**	20~22℃
Test Engineer :	Kai-Chun Chu	**Relative Humidity :**	46~48%
Test Voltage :	120Vac / 60Hz	**Phase :**	Neutral
Function Type :	GSM850 (GPRS class 8) Idle + WLAN (5GHz) Link + Earphone + HDMI Cable with Monitor + HDMI to uUSB Dongle + USB Cable (Charging from Adapter) + Camera (Front)		



Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.550000	35.7	Off	N	19.4	10.3	46.0
1.606000	36.0	Off	N	19.5	10.0	46.0
1.694000	34.5	Off	N	19.6	11.5	46.0
2.270000	34.6	Off	N	19.5	11.4	46.0
2.798000	35.3	Off	N	19.6	10.7	46.0
2.990000	39.5	Off	N	19.6	6.5	46.0
3.246000	38.5	Off	N	19.6	7.5	46.0
3.310000	37.5	Off	N	19.6	8.5	46.0
3.382000	38.5	Off	N	19.6	7.5	46.0
3.702000	39.7	Off	N	19.6	6.3	46.0

3.6 Frequency Stability Measurement

3.6.1 Limit of Frequency Stability

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

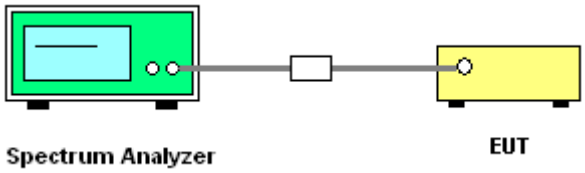
3.6.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.6.3 Test Procedures

1. To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
2. The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10dB lower than the measured peak value.
3. The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

3.6.4 Test Setup



3.6.5 Test Result of Frequency Stability

Test Band :	5GHz band IV	Test Engineer :	Bill Kuo and Stuart Lin

Mod.	Data Rate	N_{TX}	Channel	Freq. (MHz)	Center Frequency (MHz)	Frequency Deviation (MHz)	Frequency Stability (ppm)	Temperature (°C)	Voltage (V)
11a	6Mbps	1	149	5745	5745.000	0.000	0.00	20	3.4
11a	6Mbps	1	149	5745	5745.000	0.000	0.00	20	4.2
11a	6Mbps	1	149	5745	5745.000	0.000	0.00	20	3.7
11a	6Mbps	1	149	5745	5745.000	0.000	0.00	0	3.7
11a	6Mbps	1	149	5745	5745.000	0.000	0.00	50	3.7

Note: 1. Center Frequency = (Low Frequency + High Frequency) / 2.

2. EUT will turn off WLAN signal when operating temperature is lower than -10°C.

3.7 Automatically Discontinue Transmission

3.7.1 Limit of Automatically Discontinue Transmission

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

3.7.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.7.3 Test Result of Automatically Discontinue Transmission

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

3.8 Antenna Requirements

3.8.1 Standard Applicable

According to FCC 47 CFR Section 15.407(a)(1)(2) ,if transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.8.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.8.3 Antenna Gain

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

$$Directional Gain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

where

Each antenna is driven by no more than one spatial stream;

N_{SS} = the number of independent spatial streams of data;

N_{ANT} = the total number of antennas

$g_{j,k} = 10^{G_k / 20}$ if the kth antenna is being fed by spatial stream j, or zero if it is not;

G_k is the gain in dBi of the kth antenna.

The EUT supports CDD mode.

The power and PSD limit should be modified if the directional gain of EUT is over 6 dBi,

The directional gain “DG” is calculated as following table.

			DG	DG	Power	PSD
			for	for	Limit	Limit
	Ant 1	Ant 2	Power	PSD	Reduction	Reduction
	(dBi)	(dBi)	(dBi)	(dBi)	(dB)	(dB)
Band IV	-0.60	3.20	4.52	4.52	0.00	0.00

Power Limit Reduction = DG(Power) – 6dBi, (min = 0)

PSD Limit Reduction = DG(PSD) – 6dBi, (min = 0)

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz~40GHz	Jun. 09, 2014	Jul. 22, 2014~ Jul. 23, 2014	Jun. 08, 2015	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	1036004	300MHz~40GHz	Aug. 17, 2013	Jul. 22, 2014~ Jul. 23, 2014	Aug. 16, 2014	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	1027253	300MHz~40GHz	Aug. 17, 2013	Jul. 22, 2014~ Jul. 23, 2014	Aug. 16, 2014	Conducted (TH02-HY)
EMI Test Receiver	Rohde & Schwarz	ESU26	100472	20Hz – 26.5GHz	Jan. 15, 2014	Apr. 27, 2014~ May 05, 2014	Jan. 14, 2015	Radiation (03CH08-HY)
Bilog Antenna	Teseq GmbH	CBL6112D	35379	30MHz~2GHz	Oct. 10, 2013	Apr. 27, 2014~ May 05, 2014	Oct. 09, 2014	Radiation (03CH08-HY)
Horn Antenna	ESCO	3117	000143261	1GHz~18GHz	Jan. 16, 2014	Apr. 27, 2014~ May 05, 2014	Jan. 15, 2015	Radiation (03CH08-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz~40GHz	Oct. 03, 2013	Apr. 27, 2014~ May 05, 2014	Oct. 02, 2014	Radiation (03CH08-HY)
Amplifier	SONOMA	310N	187231	9kHz~1GHz	May 15, 2013	Apr. 27, 2014~ May 05, 2014	May 14, 2014	Radiation (03CH08-HY)
Preamplifier	MITEQ	AMF-7D-00101800-30-10P	1590074	1GHz~18GHz	Jul. 09, 2013	Apr. 27, 2014~ May 05, 2014	Jul. 08, 2014	Radiation (03CH08-HY)
Pre Amplifier	Agilent	8449B	3008A02665	1GHz~26.5GHz	Sep. 04, 2013	Apr. 27, 2014~ May 05, 2014	Sep. 03, 2014	Radiation (03CH08-HY)
Turn Table	Chaintek	Chaintek 3000	N/A	0~360 Degree	N/A	Apr. 27, 2014~ May 05, 2014	N/A	Radiation (03CH08-HY)
Antenna Mast	MF	MFA520BS	N/A	1m~4m	N/A	Apr. 27, 2014~ May 05, 2014	N/A	Radiation (03CH08-HY)
EMI Test Receiver	Rohde & Schwarz	ESCS 30	100356	9kHz ~ 2.75GHz	Nov. 15, 2013	Jul. 14, 2014	Nov. 14, 2014	Conduction (CO05-HY)
LISN (for auxiliary equipment)	Rohde & Schwarz	ENV216	100081	9kHz ~ 30MHz	Dec. 12, 2013	Jul. 14, 2014	Dec. 11, 2014	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz ~ 30MHz	Dec. 04, 2013	Jul. 14, 2014	Dec. 03, 2014	Conduction (CO05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Jul. 14, 2014	N/A	Conduction (CO05-HY)

5 Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.26**

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.30**